

## NEPONSET RIVER WATERSHED ASSOCIATION

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2173 Washington Street • Canton, MA 02021  
Phone 781-575-0354 • Fax 781-575-9971 • [www.neponset.org](http://www.neponset.org)

September 22, 2006

Andrew Gottlieb  
Office of Commonwealth Development  
100 Cambridge Street, Suite 1010  
Boston, MA 02114

Dear Mr. Gottlieb,

With the assistance, advice and input of the Massachusetts Instream Flow Task Force, watershed organizations, Trout Unlimited and other environmental groups, I wish to submit the following initial observations to the Water Management Act Policy Blue Ribbon Panel (hereafter “the Panel”). I would request that this letter be incorporated into the record of the Panel’s proceedings.

As we describe further below, we believe that Massachusetts faces a water resource crisis which is already severely impacting many of the Commonwealth’s rivers and streams and which will pose very serious obstacles to continued economic growth, as many of our communities literally begin to run out of water over the next four to thirty years.

An immediate program of statewide water conservation is needed to minimize degradation of the Commonwealth’s waterways, while at the same time extending the window of time during which our current public water supplies can continue to support additional economic development.

Water conservation alone will not solve all the Commonwealth’s river restoration nor water supply problems. However, implementing practical, cost effective water conservation measures now, buys the Commonwealth time to address other more challenging aspects of our water problems in a strategic rather than crisis mode.

The purpose of this letter is to highlight the context within which the Panel’s deliberations take place and to frame the issues that conservation groups believe need to be explored in greater depth during the Panel’s deliberations. Our hope is that the Panel’s discussions will generate a greater degree of consensus among regulators, water suppliers and environmental interests on the need to place Massachusetts on a proactive footing in the stewardship of its water resources.

### **The Water Problem in Massachusetts**

In Massachusetts, we are blessed with abundant annual rainfall. In spite of this seeming bounty, roughly half our annual rainfall is lost to evaporation and another quarter runs off to the sea. Both instream flows and public drinking water supplies are entirely dependent on the small

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*Boston, Canton, Dedham, Dover, Foxborough, Medfield, Milton, Norwood, Quincy, Randolph,  
Sharon, Stoughton, Walpole, Westwood*

fraction of this rainfall that remains in groundwater or reservoir storage. Traditional approaches to building communities in Massachusetts severely aggravates this situation by dramatically reducing groundwater recharge, increasing runoff, and then further depleting groundwater supplies by transporting wastewater flows across watershed and/or subwatershed lines.

Given the nature of our state's geology, the USGS tells us that surface water levels and groundwater levels are almost invariably closely interrelated. Water withdrawn from streamside wells almost always impacts water levels in the adjacent stream and the downstream watershed. Similarly, water impounded in surface reservoirs is not available to sustain instream flows in downstream areas. The result is that water supply needs and natural ecosystems such as rivers and wetland are directly competing for a share of a dwindling "pie." This situation is most severe in the drier summer months when instream flows are naturally at their lowest and human water demands—particularly for lawn irrigation water that will evaporate and be lost to the system—are at their highest, often doubling or more if unrestrained.

When streams compete head to head with nearby water withdrawal infrastructure under these conditions, the stream invariably ends up on the losing end of the contest. Adverse impacts of water withdrawals on streams include fish kills, public health threats from increased pollution concentrations, desiccation of valuable wetland and stream bottom habitats, the near elimination of many native and commercially significant fish species such as brook trout, the loss of recreation and tourism opportunities and among other impacts.

The citizens of the Commonwealth place a very high value on the health and cleanliness of their neighborhood waterways. In a statistically valid telephone survey conducted in the Neponset Watershed an extraordinary 97% of respondents said that "clean streams" are important or very important. Because of this depth of support, our wetlands and waterways are protected under the state's constitution and laws.

The regular disappearance of the Ipswich River, named the third most endangered river in America in 2003, is well known, documented and studied; but the Ipswich is not alone in experiencing serious environmental damage as a result of water withdrawals. The Egypt, Parker, Jones, Upper Charles, Neponset, Saugus and Sudbury Rivers and Poor Farm Brook are just a few of the rivers and streams that are experiencing increasing damage as a result of water withdrawals and other hydrologic modifications.

Over the last decade, state and federal agencies in Massachusetts have gone beyond simple predictions based on the fundamental facts of groundwater hydrology, to carefully document the impacts of water withdrawals and other hydrologic modifications on our streams. The scientific data and analysis on this issue in Massachusetts is now arguably the best of its kind in the country, and it leads to the undeniable conclusion that water withdrawals are a very important contributing factor in reduced instream flows in our area. The science also shows that prudent water conservation measures, while not a panacea for severely overallocated watersheds, can play an important role in helping to minimize stream impacts, especially during the drier summer months.

The science also points to the fact that these problems exist during “normal” precipitation years, not just during drought periods. It has been decades since Massachusetts has experienced serious drought conditions. When such conditions return, the science suggests that not only instream flows, but our current water supply delivery expectations themselves may be in serious doubt. Again a program of water conservation, on its own, will not cure our drought-related water supply vulnerability, but it will help to minimize it.

Finally, long range planning efforts are showing that even without drought conditions, an increasing number of our communities will face serious water shortages over the next four to thirty years as they continue to grow. Preliminary results of an ongoing Metropolitan Area Planning Council study indicate in 22 of the communities in the MAPC region, demand already exceeds WMA authorized supply. If current water use patterns continue, in just four years the number of communities running out of water rises to 36 and by 2030 it rises to 51 communities. Few problems are a more dramatic deterrent to economic development than a lack of drinking water. The MAPC analysis also shows that implementing the conservation measures contemplated in the Water Management Act Policy and Guidance (hereinafter “the Policy”) would dramatically reduce the water supply shortage in the study area, totally eliminating the problem in many towns.

### **Past Administration of the Water Management Act**

The Water Management Act (hereafter “the WMA”) was adopted by the legislature in 1985 to provide a balanced framework for managing the Commonwealth’s water resources for decades to come. However, the impact of water withdrawals on many Massachusetts rivers and streams has substantially worsened since the passage of the WMA.

Implementation of the WMA to date has failed to preserve and protect the Commonwealth’s waterways, and to provide reasonable protection for water quality, groundwater recharge, navigation, water-based recreation, wetland habitat, fish and wildlife, and floodplains—all of which are identified as “instream uses” in the act.

The WMA confers on DEP broad authority to impose limits on water withdrawals, specifically including water conservation along with any other requirements necessary to meet the purposes of the Act. Among the requirement of the WMA are:

- A prohibition against authorizing withdrawals exceeding the “safe yield” of a river basin or watershed;
- A requirement that DEP ensure an appropriate “balance” among competing withdrawals and uses;
- A requirement that DEP ensure preservation of the water resource itself;
- A requirement for reasonable protection of “instream uses” of water;
- A requirement for the implementation of water conservation measures, along with conditions that minimize the impacts of withdrawals on protected interests and “any conditions necessary to further the purposes of the [WMA].”

Perhaps the single greatest failure in the administration of the WMA to date has been the failure to address the specific legislative requirement to determine the safe yield of watershed and aquifers before issuing permits. The concept of safe yield as embodied in the act is the amount of

water that can be reliably withdrawn from a resource in light of both geologic, drought and instream flow limitations.

DEP abandoned its efforts to determine safe yield in the early 1990's, yet continues to issue permits authorizing water withdrawals, even when these withdrawals are known to cause or contribute to dewatering the source rivers. The Department has acknowledged that all these permits would be subject to appeal because the Department is not complying with its own regulations. Some of these permitted withdrawals cause significant environmental damage to the Commonwealth's rivers, streams and natural water resources.

DEP has also acknowledged that it has no criteria for determining "balance" among competing water withdrawals and uses, nor for "reasonable protection" of instream uses of water. Prior to issuance of the Policy and Guidance, the Department did not have explicit water conservation standards to be used in water withdrawal permitting.

The WMA program has failed to meet its statutory requirements, and reform is urgently needed to bring the program into compliance with the law, to ensure the sustainability of our public water supplies and to protect the Commonwealth's natural waters.

#### **Procedural Concerns Regarding the Adoption of the WMA Policy and Guidance**

Concerns have been raised over the fact that neither water supply interests, environmental interests nor the public were formally consulted in advance of the adoption of the first version of the Policy. Concerns have also been raised because the Policy was adopted as an informal policy rather than through the more formal procedure for amending regulation.

While it clearly would have been preferable for this policy to have been vetted by the legislatively mandated but defunct Water Management Act Advisory Committee, the changes embodied in the Policy were the direct outgrowth protracted deliberations in various forums involving numerous stakeholders representing a diverse array of interests. For more than a decade, requirements now codified in the Policy have been being incorporated into WMA and Interbasin Transfer Act permits on a case by case basis. For 14 years Massachusetts has had Water Conservation Standards that are closely aligned with the Policy. The increasing stringency of water withdrawal permitting conditions has been the subject of conferences and symposia organized by both environmental and water supply professional organizations. More recently, the Executive Office of Environmental Affairs went through an intensive, stakeholder-based process to develop a new comprehensive Massachusetts Water Policy, which is both a root source of, and consistent with, the WMA Policy.

The question of whether DEP exceeded its legal authority by implementing these changes as policy rather than regulation, is not an issue germane to resolution through the deliberations of the panel. Throughout the full range of state government and even municipal government agencies, it is commonplace for the fine details of a permitting program to be clarified through the adoption of policies rather than regulatory modification. The policy making process serves a valuable purpose for both the public and the regulated community, as it clarifies how issues contemplated but not spelled out in a set of regulations will be handled. This ensures consistent and fair treatment of permit applicants facing similar circumstances, and provides the regulated

community with greater certainty regarding the likely outcome of the permitting process. Where this issue has been tested in court, all legal rulings to date have affirmed DEP's broad authority to issue stringent water conservation conditions and other requirements. We hope that the Panel will not spent significant time deliberating on this issue as it can only be meaningfully resolved by resort to legal counsel and the courts.

### **Water Conservation is Practicable**

Water conservation is widely recognized as one of the most cost-effective ways to meet community water demand, avoid water shortages and postpone costly infrastructure expansions.

The effectiveness of strong incentives and reasonable requirements to implement water conservation is borne out by the experience of numerous Massachusetts communities and demonstrates that the Policy's standard of an aggregate usage of 65 gallons per person per day for residential customers (hereafter "RGPCD") is readily attainable. For example:

- The Town of Ipswich reduced its water use from 1.35 MGD in the mid-1990's to about 1.1 MGD today, in response to DEP's requirements.
- Weymouth reduced its water use by roughly 20% through implementation of a water bank required by DEP.
- Middleton has reduced its residential use from more than 90 RGPCD to 72 RGPCD.
- Communities such as Stoughton, Taunton and Weymouth have achieved RGPCD rates in the 50's.
- National studies show RCPCD figures in the 40's being attained across urban populations in some areas.

The Policy's standard of 65 RGPCD was not selected at random. It was selected after a review of studies of indoor water use in over 12 cites and 1,100 households across the country which showed a range of indoor water use of 45-69 RGPCD. The referenced studies are identified on p.38 of the Massachusetts Water Conservation Standards dated July, 2006.

Of course, no discussion of water conservation success stories in Massachusetts would be complete without including the MWRA experience, where water conservation moved the agency from needing to augment its supply by diverting the state's largest river, to a situation of water "surplus" today. Finally, DEP's analysis of water supplier self-reported information shows that a comfortable majority of Massachusetts communities already meet the RGPCD requirements of the policy.

With all this in mind, there is clearly ample opportunity for communities to achieve greater water savings. Reducing summer water use will not only reduce the stress on rivers, but will help communities meet the residential performance standards and ensure the sustainability of their water supplies. Several Ipswich basin communities have reported that water demand decreased by about 40% when mandatory watering restrictions were imposed. In Concord and Acton, Water Department staff have reported that 10-15% of customers use 50% and 40% of the towns total summer demand respectively. This represents an opportunity for the whole town, and the environment, to benefit by addressing the overuse of water by a small segment of the population.

The City of Lynn reported 29.9% unaccounted for water in 2004, at the same time that USGS has found that its reservoir system's firm yield is substantially less than its authorized withdrawals. Reducing this UAW is not only good for the source rivers, but represents good management to make the water system less vulnerable to water emergencies.

### **Water Conservation is Cost Effective and Provides Long Term Rate Stabilization**

In many cases, the marginal cost water conservation is equal to or lower than the marginal cost of developing new sources of supply. The criterion against which the cost of conservation should be evaluated is the cost of future capital costs for expanded infrastructure that are avoided through conservation.

For example, the Acton Water Department estimated in 1999 that the capital cost of developing their last source was \$3.60/thousand gallons (hereafter “/M”). Currently, it is estimated that the cost of buying MWRA water is roughly \$3.86/M when initiation fees are included and financed over 20 years. Amazingly, a number of Massachusetts communities are now considering the energy intensive process of desalination as a new source with similar or even higher costs.

By comparison, the Acton Water Department estimated in 2004 that it had accomplished the following savings through a conservation program (not including staff time):

- Summer '02 water audits: Approx. \$2,400 spent/644,820 gallons saved. = \$3.70/M
- Summer '03 water audits: Approx. \$2,400. spent/737,184 gallons saved = \$3.00/M
- Low flow showerhead “give-aways”: Approx. \$8.00/4,000 gallons/household = \$2.00/M

Other types of effective conservation measures can be implemented even more quickly and cost effectively. For example, outdoor watering restrictions entail only minimal enforcement costs, conservation pricing is effectively a no-cost conservation measure, water banking arrangements place no burden on current ratepayers and educational bill stuffers can be implemented for much less than \$1 per household per year.

Finally it is important to point out that a more meaningful evaluation of cost effectiveness would also incorporate the value of lost tourism, quality of life and ecosystem services associated with lost instream flow along with the benefits of supply system reliability, drought redundancy, energy savings, wastewater disposal, and reduced permitting uncertainty.

Concerns have also been raised that implementing conservation measures will result in the loss of revenue due to reduced water sales. Indeed, water revenues will decline if fewer units of water are sold at the same price per unit. However, the real issue facing consumers is total water bills, not water rates. Because conservation is less expensive than system expansion in most cases, it helps reduce the long term rate of growth in water supply system operating costs. Thus while conservation may lead to increased water rates, it will also generally reduce the long term growth of water bills which are the real impact on water ratepayers. Effective outreach measures are needed to raise ratepayer and media awareness of the difference between rate increases and bill increases in a conservation context.

### **Effective Aspects of the Policy and Guidance**

The Policy sets forth clear standards for water conservation, with more rigorous conditions that apply to those watersheds that are experiencing the most stress due to water losses. This is the first time that DEP has specified how it will measure water conservation, and required more rigorous actions in those areas experiencing environmental damage.

The design of the Policy provides permittees with total discretion in determining the best way to achieve efficiency improvements in light of each system's unique circumstances.

The offset provision has the potential to incorporate a range of measures to “balance the water budget,” including stormwater and wastewater considerations. This provision provides a specific mechanism to address concerns raised by the water supply and municipal representatives, regarding the need to take an integrated approach to addressing water deficits.

Finally the Policy creates a uniform and equitable approach to water conservation requirements which will help establish a level playing field for all water users, enhancing perceived fairness statewide and providing permittees with predictable outcomes from the permitting process.

### **Ineffective Aspects of the Policy and Guidance**

While the Policy represents a modest first step on the path to more sustainable water use patterns, the original (2005) version of the policy failed to address many important conservation opportunities. In 2006, the Policy was revised. Far from resolving the deficiencies of the original, every aspect of the Policy was significantly weakened and/or its implementation delayed. The current iteration of the policy fails to go far enough and fast enough in requiring conservation measures to support the requirements of the Act. During the Panel's deliberations, we hope to have a further discussion of some of the policy's deficiencies, including the following areas.

- Permits can still be issued or modified without a determination of safe yield;
- The Policy fails to redress watersheds which are fundamentally overallocated beyond the volumes of water to be saved through conservation;
- Water suppliers have at least two years to comply with performance standards, which are also weakened by explicit “enforcement margins” and deferred enforcement that will delay compliance until 2011 in some cases;
- The UAW standard is particularly weak, not only because of the enforcement margin that is 50% higher than the performance standard, but also because so much unmetered water can now be excluded from UAW;
- The Policy fails to achieve the balancing required in the WMA, as non-essential water use is allowed during low-flow or no flow periods;
- The US Fish and Wildlife Service's summer ABF value is applied as the trigger during the spring (i.e. *throughout* the May to September period);
- The seasonal cap requirement is eliminated, despite the fact that it is an important control measure in communities with excessive summer demand;
- The offset provision is vague; its implementation is delayed for at least two years in all basins; and the baseline period has been redefined as the *highest* of three options and must be exceeded at least twice before any offset program must be implemented;
- Unassessed basins are presumed to be low stress;
- All the performance standards for low stress basins are unduly weak;

- The term “basin” is redefined to include only areas upstream of the nearest USGS gage, which may or may not be representative of conditions at the point of withdrawal;
- The Policy continues to ignore the problem of impacts at the subwatershed or stream scale;
- The Policy provides no criteria for the efficiency of major classes of water users such as commercial and industry;
- The Policy fails to address uniform accounting standards for preparation of ASR’s;
- The Policy fails to address situations where a municipality spans two major watersheds;
- The Policy fails to address operational issues in communities with a mixture of local and regional supplies;
- Loopholes still exist such as lack of control over private irrigation wells;
- Monitoring requirements are unspecified.

### **Conclusion**

Failure to properly implement the WMA as intended by the legislature has resulted in increasingly severe water deficits in a growing number of Massachusetts watersheds, and reform is long overdue. Authorizing unsustainable water withdrawals that cause environmental damage is a threat to both our ecology and our economy.

The WMA requires DEP to impose conditions that minimize the impacts of water withdrawals on the environment. Tremendous progress has been made on water conservation in the Commonwealth in the 14 years since the adoption of the state’s original Water Conservation Standards. However, over this time period it has also become obvious that voluntary conservation standards are inadequate to ensure timely conservation results in a large number of communities where they are needed to forestall water shortages and environmental impacts.

The Policy is an encouraging, albeit insufficient step toward re-establishing the balancing of competing uses contemplated by the Legislature under the WMA. We hope that the Panel’s deliberations will result in new ideas and new resolve to begin addressing the state’s water problem immediately and in a proactive manner.

Sincerely,

Ian Cooke  
Executive Director